

REMARKS/ARGUMENTS

Overview of the Office Action

Claims 1-38 have been rejected by the Examiner under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 26-38 have been rejected by the Examiner under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention.

Claims 1, 4, 13, 14, 17 and 25 have been rejected by the Examiner under 35 U.S.C. § 102 as being anticipated by either Werth et al. (U.S. Patent No. 4,931,947) or Fekete, deceased (U.S. Patent No. 4,962,462).

Status of the Claims/Amendments

Claims 3, 13, 15, and 26 have been amended. Claims 1-38 are pending.

Correction of Informalities

Claims 3, 13, and 15 have been amended to proactively correct informalities (improper antecedent basis) for certain terms used in said claims.

Claim Rejections Under 35 USC § 112, First Paragraph

Claims 1-38 have been rejected by the Examiner under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a

way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In the Office Action, the Examiner noted that “[t]he written specification recites a converter 12A” as seen in Figure 4 however, the claims set forth a power conditioner.” In response, Applicant respectfully submits that, as will be appreciated by those of skill in the relevant art, a power converter is a type of power conditioner, as supported by the Specification, page 1, line 34 to page 2, line 3, which states, “In this specific example [illustrated in Figure 2], a first power conditioner 12A’ could be a dc-to-dc converter (or boost converter when it is used to boost the fuel cell voltage) for providing a dc voltage to the dc bus.” Further support can also be found in Claims 11 and 12 wherein the former discloses a power conditioner comprising an inverter and the latter discloses a power conditioner comprising a dc-to-dc converter. However, while the power converter type of power conditioner is described for specific embodiments of the present invention, such as the prior art embodiment described by Figure 4, nothing in the Specification or Claims is intended to limit the invention solely to power conversion type power conditioners. Therefore, when the term “power converter” is used, it is meant to refer specifically to converter-type power conditions, whereas the term “power conditioner” is used to describe power conditioners generally including but not limited to power converters.

In light of this clarification and its demonstrated support in the application, Applicant respectfully submits that the rejection of these claims under 35 U.S.C. § 112, first paragraph, has been overcome and Applicant therefore requests that this rejection be withdrawn.

Claim Rejections Under 35 USC § 112, Second Paragraph

Claims 26-38 have been rejected by the Examiner under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention.

In the Office Action, the Examiner noted that the terms “internal auxiliary load” and “power conditioner” in Claim 26 lacked a proper antecedent basis, and that Claims 27-38, which depend on Claim 26, inherit this defect. In response, Applicant has amended Claim 26 to correct this shortcoming. Applicants submit that Claim 26, as well as Claims 27-38 which depend on Claim 26, are now in condition for allowance, and Applicants therefore respectfully request that these rejections under 35 U.S.C. § 112, second paragraph, be withdrawn.

Claims Rejected Under 35 U.S.C. § 102(b)

Claims 1, 4, 13, 14, 17 and 25 have been rejected by the Examiner under 35 U.S.C. § 102(b) as being anticipated by either Werth et al. (U.S. Patent No. 4,931,947) or Fekete, deceased (U.S. Patent No. 4,962,462). In response, Applicants respectfully submit that neither Werth nor Fekete teach or suggest all of the elements present in the rejected claims. (Note: Werth and Fekete have identical specifications as both are direct continuations of grandparent U.S. Patent Application No. 537,460, Sep. 29, 1983, abandoned.)

In order to anticipate a claimed invention, a prior art reference must teach or suggest each and element present in the claim. However, neither Werth nor Fekete teach “a fuel cell characterized by operating parameters that are controllable to control output power provided

by the fuel cell”, which are elements of both independent Claims 1 and 14, from which Claims 4 and 13 and Claims 17 and 25 respectively depend.

Werth and Fekete both disclose the following:

“In essence, the output of load sensor 26 determines the operational mode of hybrid power system 8. As will be set forth in more detail hereinafter, **four modes** of operation selected corresponding to a very high, high, medium, and low load currents.

“The qualitative definition of a low mode is one in which the entire load can be delivered by **the fuel cell alone without help from any battery**. The medium mode is where the **fuel cell requires the assistance of at least one battery** to meet the load demand without the fuel cell being overloaded. The high mode is where **the fuel cell and two batteries would be required to meet the demand**, one battery not being sufficient. The very high mode is where **the fuel cell would have to be disconnected** because, even with both batteries assisting, the fuel cell would be overloaded and subject to damage.” (Werth, col. 4, lines 53-68; Fekete, col. 4, line 55 through col. 5, line 2; emphasis added.)

While Werth and Fekete may teach or suggest a hybrid power system comprising fuel cells and batteries wherein load currents of the system can be controlled at one of four levels, nowhere do either of these references teach or suggest the utilization of a fuel cell with controllable variable power output. On the contrary, both Werth and Fekete presume that the power output of their component fuel cell system is more or less constant, and each teaches a method for controlling the power output for the hybrid system (not the fuel cell itself) by including the additional power output of zero, one, or two batteries or, as a fourth option,

where the fuel cell is “disconnected because, even with both batteries assisting, the fuel cell could be overloaded and subject to damage.”

In stark contrast, the present application discloses a fuel cell with controllable power output as follows:

“The steady-state power flow from the fuel cell stack is controlled, using BOP controls (see BOP controller in Figure 4), by adjusting the fuel cell operating conditions such as temperature, air flow, fuel flow, air pressure or fuel pressure. The transient power flow comes from the storage device 14’. For example, when the load 18’ suddenly increases, the energy storage device will provide power to meet the increase. The fuel cell operating conditions will then be adjusted to provide more power from the fuel cell stack 10’. As the fuel cell power increases, the output power from the energy storage device decreases. When the load 18 suddenly decreases, the fuel cell stack 10’ will be producing more power than required by the load. The extra power will flow into the battery until the fuel cell operating conditions allow the fuel cell to produce a lower output power.” (Specification, page 3, line 27 through page 4, line 4; emphasis added.)

Furthermore, it is this ability to modify the power output of the system by controlling the power output of fuel cell system that enables the “system to operate at nearly constant voltage without the need for an expensive power conditioning system” and “[t]he output of the system can then be processed via a traditional power conditioning system such as an inverter or dc-to-dc converter without the need for a wide range of operating voltages” which, in turn, “reduces the cost and size of the fuel cell power conditioning system” (Specification, page 2, line 32 through page 3, line 3). The inventions of Werth and Fekete, on the other hand, can

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only operate at one of our power levels and, thus, fails to achieve this favorable result provided by the present invention.

Based on the foregoing analysis, Applicant respectfully submit that Werth and Fekete fail to teach or suggest all the claim elements of the present invention, and that Claims 1, 4, 13, 14, 17 and 25 are therefore not anticipated by Werth and Fekete. For these reasons, Applicants respectfully request that the rejections of Claims 1, 4, 13, 14, 17 and 25 under § 102(b) be withdrawn and that these claims, and those dependent thereon, be allowed to issue.

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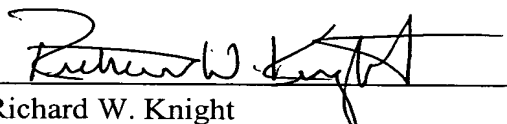
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CONCLUSION

Based on the reasons and rationale set forth herein, Applicant respectfully submits that the objections and rejections have been overcome and, accordingly, Applicant requests that the objections and rejections be withdrawn and that the claims be allowed to issue. Should the Examiner have any questions, comments, or suggestions that would expedite the prosecution of the present case to allowance, Applicant's undersigned representative earnestly requests a telephone conference at (206) 332-1394.

Respectfully submitted,

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